

1 ⁴⁰
~~48.~~ The method of claim ³⁹~~47~~, wherein the identified exception handler stores the
2 exception in local storage.

1 ⁴¹
~~49.~~ The method of claim ⁴⁰~~48~~, wherein the local storage is storage associated with a
2 current thread in which the first and second functions are executing.

1 ⁴²
~~50.~~ The method of claim ⁴⁰~~48~~, further comprising upon returning to the first function,
2 checking the local storage to determine if an exception is pending and throwing the stored
3 exception if an exception is pending.

1 ⁴³
~~51.~~ The method of claim ⁴²~~50~~, further comprising converting the stored exception to a
2 format for the first programming language.

1 ⁴⁴
~~52.~~ The method of claim ³⁴~~42~~, wherein the second programming language is the Java
2 programming language.

REMARKS

This Amendment is responsive to the Office Action mailed April 16, 1999. Claims 1 - 41 were pending and the Office Action rejected all claims. Specifically, Claims 1 - 41 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In response, the Applicants have amended Claims 12 - 15, 33 - 36, cancelled Claims 3 - 10, and have added newly drafted Claims 42 - 52. Additionally, the Applicants have made grammatical/typographical corrections to the specification, and have updated the serial number information for the related applications noted on page 1 of the application. The Applicants request that the official drawing corrections be deferred until the Claims are allowed. The Applicants have also provided the following remarks in response to the claim rejections.

The present invention is a system and method for implementing an execution stack that stores frames for functions written in different programming languages. The frames for the functions written in the different languages may be interleaved on the same stack. A data block on the stack may be utilized to traverse the stack. Specifically, by storing a stack pointer and a frame pointer to a previous frame for a function written in the same programming language, the data block allows a frame for a function written in a different language to be skipped. Additionally, exceptions can be propagated, with any necessary conversion, through the frames on the stack, even though the functions are written in different programming languages.

In regards to Claims 1 - 41, the Office Action has stated that the scope of the limitations is unclear in that the preamble recites a method for implementing an execution stack, while the claim combination recites steps for storing two frames. As is well known in the art, a stack is a data structure used to store items which are retrieved in last-in first-out order (LIFO). A stack can be used to keep track of the sequence of subroutines called in a program, or as disclosed in the specification, to store frames for functions. Data is entered or retrieved by "pushing" a new item onto the stack or "popping" the top item off the stack.

As defined in Webster's New World Dictionary, Third College Edition, 1994, Simon & Schuster, to "implement" means "to provide the means for the carrying out of; give practical effect to." Thus, as used in the present claims, "a method for implementing an execution stack" means a method for carrying out (i.e. creating, building, forming, or implementing) a data structure which is used to store and keep track of frames for function calls.

As recited in Claim 1, the stack (data structure) is created by storing a first frame on the stack. Then, in response to the first function calling a second function, a data block is stored onto the stack, before storing a second frame corresponding to the second function. The data block also includes at least one pointer to a previous frame on the stack, specifically a pointer to a frame for a previous function written in the second programming language. Thus, as clearly

defined in Claim 1, the stack is a data structure having this unique structure (a first frame, a data block having a pointer to a previous frame for a function written in the second programming language, and then a second frame) as formed by the recited method steps.

Also, as the term is commonly used in the art, to “implement” a stack means to define the structure of the stack and/or the method for storing the particular desired data for a given stack. In view of the foregoing, the Applicants believe that Claim 1 is sufficiently definite to clearly define the scope of the present invention and respectfully request reconsideration of this rejection.

Claim 12 has been amended to overcome the rejection and is now believed to be allowable for the reasons discussed above with reference to Claim 1. In addition, the Applicants note that Claims 12-13, 33-34 and 14 - 15 are not identical. Specifically, claim 12 “stores a data block on the execution stack . . . the data block including at least one pointer . . .” whereas claim 33 “stores in local storage at least one pointer . . .” Claim 14 is an apparatus claim and claim 15 is a method claim with different elements, so they are patentably distinct as well.

Finally, the Office Action has objected to the phrase “throwing an exception.”

References to “throwing an exception” can be found in the specification at:

page 18, lines 12 - 16
page 19, lines 9 - 13, 21 - 25
page 20, lines 7 - 12, 19 - 23
page 21, lines 8 - 10.

Specifically, in the specification on page 18, lines 7 - 16, exceptions are discussed as reproduced below:

Exceptions are signals that indicate something out of the ordinary has happened. For example, an exception may indicate that the system has run out of memory or that the end-of-file of a file has been reached. Some exceptions indicate unrecoverable situations (e.g., out of memory) and some exceptions indicate recoverable situations (e.g., end-of-file).

When an exception is generated, a Java run time system typically searches for an exception handler for that exception. The search starts within the function in which the exception was thrown and then propagates through the functions on the execution stack.

If an exception handler is found, the exception handler catches the exception and takes the appropriate action that may include throwing another exception.

Thus, as clearly described in the specification, the phrase "throwing an exception" means generating an exception.

The Applicants believe that the claims as originally pending were sufficiently definite as to enable a valid search. However, in order to expedite the processing of this application, the Applicants have amended some claims, and added newly drafted claims 42 - 52. The present claim amendments have been made solely in response to the 112 rejection, and not to overcome any substantive prior art rejection.

Applicants believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
BEYER & WEAVER, LLP

A handwritten signature in black ink, appearing to read "Doyle B. Johnson", with a long horizontal flourish extending to the right.

Doyle B. Johnson, Esq.
Reg. No. 39,240

P.O. Box 61059
Palo Alto, California
(650) 493-2100